

WHAT IS CLAIMED IS:

1. A system for continuous purification of a gas flow comprising:
a first sodium fluorine trap coupled to a gas supply line, wherein said gas supply line
conducts said gas flow;
a second sodium fluorine trap coupled to said gas supply line in parallel to said first
sodium fluorine trap;
a switching mechanism operable to switch gas flow from said first sodium fluorine trap to
said second sodium fluorine trap at the occurrence of a predefined event.
2. The system of Claim 1, wherein said gas flow comprises:
fluorine; and
trace hydrogen fluorine.
3. The system of Claim 1, wherein said switching mechanism is operable to switch gas
flow from said first sodium fluorine trap to said second sodium fluorine trap when said first
sodium fluorine trap is approximately saturated.
4. The system of Claim 3, further comprising:
a first manifold operable to direct said gas flow from said gas supply line to said first
sodium fluorine trap; and
a second manifold operable to direct said gas flow from said gas supply line to said
second sodium fluorine trap.
5. The system of Claim 1, further comprising one or more fluorine generation cells,
wherein said one or more fluorine generation cells are coupled to said gas supply line and
wherein said one or more fluorine generation cells provide said gas flow.
6. The system of Claim 1, further comprising:
a gas output line coupled to said first sodium fluorine trap and said second sodium
fluorine trap; and
an output filter coupled to said gas output line.

7. The system of Claim 6, further comprising:

a low pressure buffer tank in fluid communication with said first sodium fluorine trap and said second sodium fluorine trap, wherein said low pressure buffer tank is located downstream of said output filter; and

a compressor in fluid communication with and downstream of said low pressure buffer tank, wherein said compressor is operable to compress gas from said low pressure buffer tank.

8. The system of Claim 1, further comprising:

a low pressure buffer tank in fluid communication with said first sodium fluorine trap and said second sodium fluorine trap; and

a compressor in fluid communication with and downstream of said low pressure buffer tank, wherein said compressor is operable to compress gas from said low pressure buffer tank.

9. A method for purifying fluorine gas comprising:

directing a fluorine gas flow to a first sodium fluorine trap;

determining if said first sodium fluorine trap is approximately saturated; and

if said fluorine trap is determined to be approximately saturated:

switching said fluorine gas flow to a standby sodium fluorine trap;

regenerating said first sodium fluorine trap; and

replacing said first sodium fluorine trap.

10 The method of Claim 9, further comprising placing said first sodium fluorine trap in standby mode relative to said standby fluorine trap.

11 The method of Claim 9, wherein the step of regenerating said first sodium fluorine trap comprises:

heating said first sodium fluorine trap; and

purging said first sodium fluorine trap with nitrogen.

12. A process gas generation cabinet comprising:

a cabinet housing encompassing a process gas generator, said housing further comprising:

one or more input vents to direct air to said process gas generator; and

a normal output port; and

an emergency output port; and

an exhaust system comprising:

an exhaust channel;

a normal operating channel coupled to said normal output port and said exhaust channel, said normal operating channel further comprising a normal operating valve;

an emergency channel coupled to said emergency output port of said cabinet housing and said exhaust channel, said emergency channel further comprising:

an emergency exhaust valve; and

an absorbent packed material; and

a fluorine sensor located upstream from said normal operating valve; said fluorine sensor operable to close said normal operating valve and open said emergency exhaust valve if fluorine levels in said cabinet housing exceed a preset level.

13. The process gas generator cabinet of Claim 12, wherein said exhaust channel comprises a house exhaust system.

14. The process gas generator cabinet of Claim 12, wherein said fluorine sensor is operable to shut down said process gas generator if fluorine levels in said cabinet housing exceed said preset level.

15. The process gas generator cabinet of Claim 12, wherein said absorbent packed material comprises aluminum oxide.

16. The process gas generator cabinet of Claim 12, wherein said fluorine gas sensor is located inline with said normal operating valve.

17. The process gas generator cabinet of Claim 12, wherein said cabinet housing further encompasses a negative pressure storage tank operable to store process gas produced by said process gas generator.

18. A gas distribution system comprising:

- a process gas generator;
- a gas routing mechanism connected to said process gas generation system;
- a negative pressure storage tank connected to said gas routing mechanism, said negative pressure storage tank operable to store process gas produced by said process gas generator
- a negative pressure line coupled to said negative pressure storage tank;
- a compressor coupled to said negative pressure line operable to:
 - draw process gas from said negative pressure storage tank;
 - compress said process gas to produce a positive pressure process gas; and
 - output said positive pressure process gas; and
- a positive pressure storage tank in fluid communication with said compressor, said positive pressure storage tank operable to store said positive pressure process gas.

19. The gas distribution system of Claim 18, wherein said positive pressure storage tank is further operable to provide positive pressure process gas to a manufacturing tool.

20. The gas distribution system of Claim 18, further comprising a cabinet housing encompassing said process gas generator, said gas routing mechanism and said negative pressure storage tank.

21. The gas distribution system of Claim 18, wherein said gas routing mechanism comprises a manifold.

22. The gas distribution system of Claim 18, further comprising a positive pressure line coupled to said compressor and to said positive pressure storage tank.

23. A gas distribution system comprising:

- a process gas generator;
- a gas routing mechanism connected to said process gas generation system;

a negative pressure storage tank connected to said gas routing mechanism, said negative pressure storage tank operable to store process gas produced by said process gas generator

a negative pressure line coupled to said negative pressure storage tank;

a plurality of compressors coupled to said negative pressure line, each of the plurality of compressors operable to:

draw process gas from said negative pressure storage tank;

compress said process gas to produce a positive pressure process gas; and

output said positive pressure process gas; and

a positive pressure storage tank associated with each of said plurality of compressors, each positive pressure storage tank in fluid communication with said associated compressor, and wherein each positive pressure storage tank is operable to store said positive pressure process gas received from said associated compressor.

24. The gas distribution system of Claim 23, wherein each said positive pressure storage tank is operable to provide said positive pressure process gas to an associated tool.

25. A containment cart comprising:

a liquid-tight outer container configured to store a process gas generation cell containing an electrolyte liquid, said liquid tight outer container sized to contain said process gas generation cell and at least all said electrolyte liquid inside said process gas generation cell, wherein said outer container is formed of a material inert to said electrolyte liquid; and rolling hardware coupled to the bottom surface of said liquid tight container.

26. The containment cart of Claim 25, further comprising a removable lid coupled to said liquid-tight outer container with a liquid-tight seal.

27. The containment cart of Claim 25, further comprising one or more supports to support said process gas generation cell within said liquid-tight outer container.

28. The containment cart of Claim 25, further comprising a level sensor operable to detect the presence of spilled electrolyte liquid within said liquid tight outer container.

29. The containment cart of Claim 28, further comprising a sump configured to channel spilled electrolyte liquid to said level sensor.

30. The containment cart of Claim 25, wherein said liquid-tight outer container is formed from stainless steel.

31. A containment cart comprising:

a liquid-tight outer container configured to store a process gas generation cell containing an electrolyte liquid, said liquid tight outer container sized to contain said process gas generation cell and at least all said electrolyte liquid inside said process gas generation cell, wherein said outer container is formed of a material inert to said electrolyte liquid; rolling hardware coupled to the bottom surface of said liquid tight container; a removable lid coupled to said liquid-tight outer container with a liquid-tight seal; one or more supports to support said process gas generation cell within said liquid-tight outer container;

a level sensor operable to detect the presence of spilled electrolyte liquid within said liquid-tight outer container; and
a sump configured to said spilled electrolyte liquid to said level sensor.